The Michigan Auto Project (MAP) is pleased to report a 50 percent reduction in Toxic Release Inventory (TRI) reportable releases by DaimlerChrysler, Ford, and General Motors manufacturing facilities from 1991 through 1999. During the same time period, a 70 percent reduction in reportable releases of Great Lakes Persistent Toxic (GLPTs) substances was achieved. These reductions are calculated on a per-vehicle-produced basis and reported in more detail in the MAP Progress Report.

The report highlights the individual and joint accomplishments undertaken by DaimlerChrysler, Ford, and General Motors (Auto Companies) in reducing the use, generation, and release of toxic substances, as well as other materials of concern. It also provides a narrative of other pollution prevention (P2) activities of the Auto Companies and MDEQ implemented under the auspices of the Auto Project.

The MAP is a voluntary P2 and resource conservation partnership between the Auto Companies and MDEQ. The partnership builds on the success of the U.S. Auto Project that concluded in 1998. Therefore, the report is part of a series of reports regarding the automotive industry and the evolving relationship between that industry and MDEQ.

The pollution prevention link between the Auto Companies and MDEQ began in April 1991 with the Regional Governors announcing the Great Lakes Automotive Pollution Prevention Project with the Big Three – *the first industry-sector, voluntary, pollution prevention partnership in the nation*.

At that time, the American Automobile Manufacturers Association (AAMA), the trade association of the Auto Companies, took primary responsibility for coordinating the project. In November 1998, the AAMA was dissolved; and the U.S. Auto Project officially ended. Following this, MDEQ and the Auto Companies reconvened the Auto Project, maintaining its mission, but with a focus on Michigan-based automotive manufacturing activities.

The Michigan Auto Project continues the success of the previous auto projects, focusing on pollution prevention within the companies and, in partnership with their auto suppliers, publishing case studies, supporting non-competitive collaborative research, and engaging stakeholders to obtain feedback on the Project.

For Additional Information

Contact DaimlerChrysler, Ford, General Motors or the Michigan Department of Environmental Quality (MDEQ) at the addresses listed below:

DaimlerChrysler
Doug Orf
djo6@daimlerchrysler.com

Ford
Sue Rokosz
srokosz@ford.com

General Motors
Sandra Brewer
sandra.s.brewer@gm.com

MDEQ
Anita Singh Welch
welcha@state.mi.us

Internet Access
The Michigan Auto Project Progress Report is a virtual working document available at **www.deq.state.mi.us/ead/p2sect/auto.**

If you do not have internet access, call the Environmental Assistance Center at 1-800-662-9278.

Acknowledgements
DaimlerChrysler Corporation, Ford Motor Company, General Motors Corporation, and the MDEQ thank the Michigan Auto Project Stakeholder Group members for providing advice to the Auto Project Partners and facilitating public information exchange. The Auto Companies and MDEQ also acknowledge the guidance and counsel provided by the U.S. EPA Region 5.

MICHIGAN DEPARTMENT OF
ENVIRONMENTAL QUALITY
ENVIRONMENTAL ASSISTANCE DIVISION
PO BOX 30457
LANSING MI 48909-7957

www.deq.state.mi.us

Environmental Assistance Center
1-800-662-9278

June 2001

Printed on Recycled Paper

Printed by a Michigan Great Printer

AUTHORITY: PA 451 OF 1994
TOTAL COST: $1,291.80
TOTAL COPIES: 4,000
COST PER COPY: $.32
MICHIGAN DEPARTMENT OF ENVIRONMENTALQUALITY

Michigan Automotive Pollution Prevention Project

POLLUTION PREVENTION P2 MICHIGAN AUTO PROJECT

a voluntary pollution prevention and resource conservation partnership

www.deq.state.mi.us/ead/p2sect/auto

DAIMLERCHRYSLER

GM

Ford Motor Company

DEQ

John Engler, Governor
Russell J. Harding, Director
1-800-662-9278

Successes of the Michigan Auto Project To Date

- **Completed over 100 case studies, highlighting the auto companies' P2 efforts.**
- **Reduced reportable releases of GLPTs from manufacturing facilities by 70%, on a vehicle-produced basis, since the Auto Project began in 1991.**
- **Created the first voluntary pollution prevention partnership between an industry sector and government.**
- **Established a project mission statement, goals, and objectives.**
- **Establishes an external stakeholder group of diverse organizations to provide guidance and counsel to the project.**
- **Provides public accountability by having auto project-related documents available on the web.**
- **Encourages automotive suppliers to adopt cost-effective pollution prevention practices within their facilities to reduce the use, generation, and release of persistent toxic substances and other materials of concern.**

Representatives from the auto companies and the MDEQ signing the Project Agreement on September 23, 1999.

Michigan Auto Project Case Studies

DaimlerChrysler
Recycling Accomplishments at Sterling Heights Assembly

Description of the Facility:
The Sterling Heights Assembly Plant (SHAP) located in Sterling Heights, Michigan, has 3 million square feet of manufacturing floor space that covers 310 acres. The plant produces 985 vehicles per day including the Dodge Stratus sedan, the Chrysler Sebring sedan, and the Chysler Sebring convertible, and employs 2,976 people during two shifts.

Description of the Opportunity:
Within the day-to-day operations SHAP receives parts from suppliers in various types of packaging including cardboard, plastic, wood, rubber, steel, metals, and chemicals. The packaging material is not used during the manufacturing process; therefore, it creates unwanted waste. The resulting waste needs to be removed from the plant and disposed of at great cost to the company.

Description of the Improvement:
Sterling Heights Assembly Plant has set up a Recycling Team that meets on a weekly basis with the Waste Elimination Team (WET) to review and improve the recycling efforts of the plant. This group of individuals continually looks for ways to avoid sending these materials to landfills and at the same time generate revenue by selling recyclable materials to companies that can extend the useful life of those materials. The team coordinates pick-up routes, sorting recyclables, compacting, cardboard collecting, banding, palletizing, and shipping truckloads of materials.

Substance Addressed: Wood pallets, plastic wrap, polyethylene, polypropylene, polystyrene, rubber, styrofoam, steel, brass, aluminum, copper, cardboard, and various cap plugs used by internal and external suppliers to cover various ports or electrical connections.

Reduction Obtained: 277,000 pounds of waste going into landfill in 1998

Savings Realized: $400,000 in 1998

Environmental Impact: Landfill avoidance
Beneficial Reuse

General Motors
Hexavalent Chrome Process Switched to Non-Chrome Process

Description of the Facility:
The General Motors Service Parts Operations (GMSPO) Flint Process Center located in Flint, Michigan, handles after-market parts for GM vehicles. This 3.2 million square foot facility, situated on 167 acres, employs nearly 1,200 people.

Description of the Opportunity:
The plant paints more than 3.3 million parts annually that are shipped to regional distribution centers for dispersal to dealerships throughout the country. A component pretreatment process used a substantial amount of hexavalent chrome in the final rinse before painting. Though an excellent corrosion inhibitor, it has the potential to adversely affect human health and produces by-products that require extensive wastewater treatment.

Description of the Improvement:
The production of a quality part is a top priority at GMSPO-Flint. The effectiveness of hexavalent chrome as a corrosion inhibitor is well documented, and it was used in both paint systems at the Flint Processing Center. However, it posed a potential health risk to employees, produced hazardous waste by-products, and required costly wastewater treatment. Hence, a substitute was desired. Panel tests were performed by GMSPO and PPG to determine a suitable replacement. When the results demonstrated that a new, non-chrome sealer produced parts of equal or better quality, the decision was made to change the process. Immediately, an improvement was realized in three ways: 1) the new sealer was determined to be non-hazardous, 2) wastewater treatment of the chrome was eliminated, and 3) the sealer rinse stage was much easier to maintain.

Substance Addressed: Hexavalent chrome sealer

Reduction Obtained:
The program eliminated the use of hexavalent chrome which reduced sulfuric acid use and removed hazardous waste and sodium metabisulfite in the wastewater treatment process. It also lessened the potential health and safety risks of employees who handled the chemical. The annual savings associated with the elimination of hazardous waste amounted to $44,300. Taking into account the reduction of the treatment chemicals associated with the wastewater treatment process, the annual savings resulted in over $48,000.

Capital Investment: Nominal, less than $100

Environmental Hierarchy: Pollution prevention

Ford Motor Company
Elimination of Paint Sludge Landfill Disposal at Ford Manufacturing Plants

Description of the Facility:
Nine Ford Motor Company assembly plants worldwide and one engine and fuel tank plant have incorporated new technology in their paint departments. The facilities range in age, with the oldest being opened in 1925 (Norfolk Assembly Plant, Norfolk, Virginia) and the newest being opened in 1975 (Ohio Assembly Plant, Avon Lake, Ohio). Each facility employs anywhere from 1,000 to 4,000 individuals depending on the size and production output at the plant. The cars and trucks assembled at these plants include the Ford Focus, Lincoln LS, Econoline van, and European Transit van. Total production for 1998 at the ten facilities is approximately 1.9 million vehicles and 3 million fuel tanks and engines.

Description of the Opportunity:
Typically, the paint spraybooth waterwash systems in automotive assembly plants are chemically-treated to produce a conditioned (detackified) paint sludge, which settles in the sludge basin. Periodically, the sludge basin is drained and the deposited sludge removed for solidification and landfill disposal. A full-scale assembly plant generates about 1,000 cubic yards of paint sludge each year.

Description of the Improvement:
Since 1995, a number of Ford assembly plants have used a patented solvent-in-water emulsion to replace conventional, chemically treated water as the scrubbing medium in the paint spraybooth system. This unique chemistry enhances many aspects of spraybooth system operation and serves as the basis for a recycling process that eliminates the need to landfill paint sludge. The recycling program, called EPOC II TM (Emulsion Program for Overspray Capture), is a service provided by Philip Services Corporation's Automotive Paint Services Group. The emulsion solubilizes the resin (organic) portion of the paint overspray and disperses the pigment and other inorganic ingredients. Paint sludge in the conventional sense is no longer generated; rather, the emulsion accumulates paint components that are removed periodically by replacing all or part of the recirculating emulsion with fresh emulsion. The saturated emulsion is transported for processing to Philip's dedicated processing facility in Detroit, Michigan, at which the paint solids are recovered for incorporation into useful products and the active chemical ingredient is recycled for use back into fresh emulsion.

Substance Addressed: Landfill disposal of paint sludge

Reduction Obtained: Greater than 90%

Capital/Operations Investment: Less than $1 million per facility

Environmental Hierarchy: Source reduction and waste stream elimination

for more case studies, visit **www.deq.state.mi.us/ead/asp/autocasestudy.asp**

Michigan Auto Project Stakeholder Group Members